Attorney Docket No.: 2001P14037WOUS

## U.S. Application No. 10/801,957 Exhibit A

ine vvine Cellar: wine advice from The Winedoctor

Page 1 of 3

hewinedoctor.com Home > Wine Advice > The Ideal Wine Cellar

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# Tasting Notes:

- ► Producer Profiles
- Vintages and Regions
- Tasting Feature 2006
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- Wine & Dine

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- Wine Guides
- Wine Advice
- Wine Glossary
- Wine Features
- Other Resources



# The Ideal Wine Cellar

Developing a passion for wine inevitably results in the desire for a cellar of wine to be at your dispφsal. This may seem eminently impracticable, but I assure you that a wine cellar is not the sole reserve of the rich or titled. Anyone, whether living in a flat or a similarly cellarless modern semi-detached house can, with a little ingenuity, 'cellar' wine. By considering the essential characteristics of the ideal cellar it will become clear that these may be applied to any nook or cranny within the home. This feature goes on to examine the most important aspects of wine storage to consider, particularly temperature and humidity, before my next article which explains how to put some of this knowledge to practical use when making a wine cellar. Of course, another option to consider for those without the space, time or inclination to consider these mosimportant aspects of wine storage is a temperature controlled wine unit.

### Terhperature

This is certainly the greatest concern when cellaring wine. Today's modern, centrally heated homes are not at all conducive to wine storage. Room temperature is usually in excess of a very comfortable 20°C, great for humans but rapidly lethal when it comes to wine. The temperature inside the average home is also very variable, with most rooms warming rapidly during the day as the radiators switch on, cooling again at night as the heating is switched off. This is also true in the kitchen, where many people seem to store wine, at least in the short term. Here the amblent temperature varies significantly, reaching obscene levels when the Sunday roast is in the even and there are pans bubbling away on the hob. This inconstancy of temperature is of as much concern as the temperature itself.

The ideal temperature is 10°C to 13°C, but several degrees either side of this is quite safe. In fact, provided the wines do not freeze, which does not occur until the temperature drops some way below 0°C (the alcohol acts as an antifreeze), then it is quite safe for temperatures to drop lower than the ideal. The worst that may happen is that some non cold-stabilised wines may throw a small deposit of harmless tartrate crystals, which is of no real consequence. It is worth remembering, however, that one of the purposes of cellaring wine is so that it develops over time, gracefully maturing into something more complex and interesting than the wine in its youth. Lower temperatures inhibit this process, meaning you will have to wait even longer to enjoy the wines at their peak. A little above 13°C is also quite safe, and I would be happy with wines stored medium term in temperatures up to about 15°C. This will not



spoil the wines at all, but as you may expect warmer temperatures may accelerate the ageing

Accelerating the maturation of the wine may seem desirable, as you will be be drinking the wines at their peak sooner than you would otherwise be able to. I'm sure, however, that wines aged more slowly, at 10°C to 13°C, have greater complexity. I don't advise trying to accelerate the ageing process with slightly warmer temperatures. With even higher temperatures, up to 18°C, many wines will still survive, although I do not recommend such temperatures for even medium term storage (despite this being a typical temperature inside many off-licences and even specialist wine merchants). The wines most likely to suffer are aromatic white wines and Champagne, both of which are likely to lose some of their freshness and character. Any older, more fragile wines would also suffer in such conditions. Temperatures above this sort of level, a 20°C and beyond, rapidly sound the death knell for most wines. As a general rule, the higher the temperature, the less exposure is required to kill the wine. Just a short exposure to a temperature of 30°C can damage a wine.

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11/14/2005

### U.S. Application No. 10/801,957 Exhibit A

The Wine Cellar: wine advice from The Winedoctor

Page 2 of 3



change in temperature experienced by a bottle of wine living next to the cooker or radiator results in an inexorable expansion and contraction of the wine. It may expand so much as to seep around the cork. As the wine contracts air will be drawn in. The wine will rapidly deteriorate, taking on cooked and oxidised flavours. In the cellar, fluctuations over a period of hours (such as might happen if the cellar houses a boiler or hot water pipes) will soon damage the wine in a similar manner. Fluctuations taking place over the day (alternating between a warm day and a cool night) may be just as unhealthy. Fluctuations over the course of the year (cooler in winter, less so in the summer) are in my opinion of no consequence, provided the absolute temperature does not rise too high, as the change is too gradual to have any great effect on the wine.

#### Humidity

A moderately damp cellar is ideal, as humidity helps to keep the corks from drying out. This is also achieved by keeping the bottles horizontal, so that the wine is in constant contact with the cork. A cork that is kept moist keeps its shape, and thus remains well expanded and maintains a good seal. Although it is not too difficult to get around the problem of a cellar with humidity that is too low, a cellar that is too damp is more difficult to rectify. Fortunately, there are simple measures that may be employed to avoid the problems inherent with high humidity levels.

#### Light

Darkness is ideal for a cellar. Ultraviolet light destroys wine, which is one of the reasons wine is traditionally bottled in coloured glass. Consequently it makes sense to store wine away from the potentially damaging effects of such light sources.

#### Vibration

Wine needs to sleep, and frequent disturbance of the wine will agitate it. This is unlikely to be a significant problem in the modern home, the small and occasional vibrations from domestic appliances being too slight to cause any real problem.

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- ► Wine Bottle Sizes
- ►The Ideal Wine Cellar
- ► Making a Wine Cellar
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- ►Corks & Corkscrews
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- ► Serving Temperature
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- ►Wine Glasses & Phenolic Compounds
- ►Wine and Health 1
- ►Wine and Health 2

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11/14/2005